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PAE99-083TRDE
Our File: P23236EP

Claims

1. Demodulation structure for downconverting and demodulating a digitally modulated signal (S_0), with
a local oscillator means (1, 5, 8) for providing a local oscillator signal (S_{lo}),
a mixer means (2) for mixing said local oscillator signal (S_{lo}) and said digitally modulated signal (S_0) in order to obtain a mixed signal,
a low pass filter means (3) for low pass filtering said mixed signal from said mixer means (2), and
an analog-to-digital converting means (4) for converting the filtered signal from said low pass filter means (3) into a downconverted and demodulated digital signal (S_1),
whereby said local oscillator signal is set in respect to said modulated digital signal so that said downconverted and demodulated digital signal (S_1) output from said analog-to-digital converting means comprises two serially arranged information parts.

2. Demodulation structure according to claim 1,
characterized in,
that said digitally modulated signal (S_0) is I/Q-modulated and said two serially arranged information parts comprised in said downconverted and demodulated digital signal (S_1) are an I-part and a Q-part of the I/Q-modulated digital signal.

3. Demodulation structure according to claim 1 or 2,
characterized in,
that said digitally modulated signal (S_0) is modulated in a signal band having a center frequency (f_c) and said local oscillator signal has a center frequency (f_{lo}), which is, in respect to said center frequency (f_c) of the signal band, offset by half of the signal band width of the modulated digital signal (S_0).

4. Demodulation structure according to claim 1 or 2,
characterized in,

that said local oscillator signal (S_{lo}) is modulated with at least two modulation states having different phases during the symbol period of the modulated digital signal (S_0).

5. Demodulation structure according to claim 4,

characterized in,

that said two different modulation states have the same magnitude and a 90 degree phase shift in respect to each other.

6. Demodulation structure according to claim 4 or 5,

characterized by

a modulation control means (7) for supplying a modulation signal to said local oscillator means (5) in order to internally modulate the local oscillator signal (S_{lo}) with said two modulation states.

7. Demodulation structure according to claim 4 or 5,

characterized by

an analog circuit means for modulating said local oscillator signal from said local oscillator means with said two modulation states and outputting a modulated local oscillator signal to said mixer means.

8. Demodulation structure according to claim 7,

characterized in,

that said analog circuit means (9) comprises a switch means (10) which can be switched between a first branch (12) having a phase shift means (11) and a second branch (13) having no phase shift means, whereby said switch means is switched by means of a control signal with a frequency of two times the symbol frequency of the modulated digital signal.

9. Demodulation structure according to one of the claims 4 to 8,

characterized by

a band pass filter (6) for band pass filtering said modulated local oscillator signal (S_{lo}).

10. Demodulation structure according to claim 9,

characterized in,

that said band pass filter (6) has a center frequency corresponding to the center frequency (f_c) and a bandwidth corresponding to the bandwidth of the signal band of the modulated digital signal.

11. Method for downconverting and demodulating a digitally modulated signal (S_0), with the steps of

providing a local oscillator signal (S_{lo}),

mixing said local oscillator signal (S_{lo}) and said digitally modulated signal (S_0) in order to obtain a mixed signal,

low pass filtering said mixed signal, and

analog-to-digital converting the filtered signal into a downconverted and demodulated digital signal (S_1),

whereby said local oscillator signal (S_{lo}) is set in respect to said modulated digital signal (S_0) so that said downconverted and demodulated digital signal (S_1) comprises two serially arranged information parts.

12. Method according to claim 11,

characterized in,

that said digitally modulated signal (S_0) is I/Q-modulated and said two serially arranged information parts comprised in said downconverted and demodulated digital signal (S_1) are an I-part and a Q-part of the I/Q-modulated digital signal.

13. Method according to claim 11 or 12,

characterized in,

that said digitally modulated signal (S_0) is modulated in a signal band having a center frequency (f_c) and said local oscillator signal (S_{lo}) has a center frequency (f_{lo}), which is, in respect to said center frequency (f_c) of the signal band, offset by half of the signal band width of the modulated digital signal (S_0).

14. Method according to claim 11 or 12,

characterized in,

that said local oscillator signal (S_{lo}) is modulated with at least two modulation states having different phases during the symbol period of the modulated digital signal (S_0).

15. Method according to claim 14,

characterized in,

that said two different modulation states have the same magnitude and a 90 degree phase shift in respect to each other.

16. Method according to claim 14 or 15,

characterized by

internally modulating the local oscillator signal (S_{lo}) with said two modulation states by means of a supplied modulation signal.

17. Method according to claim 14 or 15,

characterized by

externally modulating said local oscillator signal (S_{lo}) with said two modulation states and outputting a modulated local oscillator signal to said mixing step.

18. Method according to claim 17,

characterized in,

that said local oscillator signal (S_{lo}) is switched between a phase shift state and a no phase shift state by means of a control signal with a frequency of at least two times the symbol frequency of the modulated digital signal.

19. Method according to one of the claims 14 to 18,

characterized by

band pass filtering said modulated local oscillator signal (S_{lo}).

20. Method according to claim 19,

characterized in,

that said band pass filtering step uses a center frequency corresponding to the center frequency fc and a bandwidth corresponding to the bandwidth of the signal band of the modulated digital signal.